

**Work Order ID 62909**

Wednesday, October 13, 2010 9:02:51 AM



Page 2

Item ID: D350-636-015

Accept



Setup Start



Revision ID:

Item Name: Skidtube STD w/ Training Wearplates, LH

Stop

**Work Order ID 62909**

Wednesday, October 13, 2010 9:02:51 AM

ASAP



Page 1

Item ID: D350-636-015

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Revision ID:

Item Name: Skidtube STD w/ Training Wearplates, LH

Stop



Start Date: 10/13/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 10/22/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan: *BP*Date: *10/10/13* Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D4168

A

IIN-D350-636

H

0.00

0.00

DOCUMENT CONTROL

Memo

Photocopy blue file and type labels per PPP D350-636-015 CHG 001

*Siolulog*

Document Control

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

H:\FORMS\Quality Assurance\approved QA\NCRWO RevE

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**NOTE:** Date & initial all entries

H:\FORMS\Quality Assurance\approved QA\NCRWO RevE

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Run Start  
Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

11-Weld D2744 Cap as per Dwg D4168 and QSI 004. Fill grooves in bend left  
from bending as per QSI 004  
A/R Aluminum Rod batch: M115778

BE 10/10/14

12-Grind welds flush as per Dwg D4168

DP 10-10-15

120



QC

Quality Control

QC10- Inspect visual per QSI004- ground welds

0.00

Memo

0.00

81010103

130



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

81010103

70

W/O:		WORK ORDER CHANGES					
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Run Start

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

160

0.00



Skidtubes

Skidtubes

**Memo**

0.00

Skidtubes

1-Open up holes of Detail C and ground handling to 0.625" (total of 8 holes per side) as per dwg D4168.

2-Open up holes of Detail B to 0.750" (total of 4 holes per side) as per dwg D4168.

3- Open float hole to 0.500" (4 per side)

Open wearplate holes to size as per dwg (4 holes per sides)

4-Chamfer holes of Detail B, C, ground handling and float holes per dwg D4168 (welding instructions on sheet 8)

5-Deburr and blow out all chips from inside of tube

6- Prepare tube for welding, remove alodine as required.

7-Bond web D2739 in place as per QSI 015


A/R ☐☐☐ Sikaflex-291 batch: 1115114 ☐☐  
exp. date: 1/1/30

8- Weld spacers D3490-1, D3490-3 and D2743 as per dwg D4168 and D4170-1 &amp; QSI004

(welding instructions on sheet 8)

A/R ☐☐☐ Aluminum Rod batch: 1115778

9- At section AJ-AJ drill out x-bolt spacer to 0.404"

 10-11-3

(X1) BB 10/11/03

BE 10/11/04  
BE 10/11/04

**Dart Aerospace Ltd**

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QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
	10-Grind welds flush as per Dwg D4168								
	11-Spot face ground handling holes section (total of 4 places per side) as per dwg D4168								
	12-C-Base section C B C B								
	12-Deburr holes								
170	QC10- Inspect visual per QSI004- ground welds	0.00							
	Memo	0.00							
180	QC5- Inspect part completeness to step on W/O	0.00							
	Memo	0.00							

10.11.04

DP 10-11-4

8/10/10/04

(X)

test Fiter wearplate plates in  
Fix not great but will  
work

8/10/10/05  
(X)

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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

190

Pressure Wash per QSI005 4.3

0.00



HandFinish

Memo

0.00

Hand Finishing

Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.

1 BR 10-11-5.

200

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00



Powdercoat

Memo

0.00

Powder Coating

START TIME: 9:30  
OVEN TEMPERATURE: 350°  
FINISH TIME: 10:00

1 BR 10-11-5.

210

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

Inspect for foreign object per QSI 024

1 BR 10-11-08 @

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Customer:

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start

Stop

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

220



HandFinish

Hand Finishing

HandFinishing

Memo

1- Install inserts as per Dwg D4168

0.00

0.00

10 11-08 ①

230



HandFinish

Hand Finishing

HandFinishing

Memo

1-Inspect for Foreign Objects

2-Spray inside of tube with "LPS-3" batch: N/A

3-Install blade fitting D3488-041, wearshoes and ground handling hardware as per dwg D4168

SIKA FLEX 241

BATCH: 1115114

EXP DATE: 11/01

0.00

0.00

10-12-08 ①

4-assemble o-ring to plug as per dwg D3492 and apply o-ring lube

A/R 55-o-ring lube batch: 1114189

5-Coat all exposed fasteners with "LPS Procyon"

batch: 1114596

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Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270		0.00							
	Packaging								
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPPD350-636-015								
	Location: _____								
	PPP rev: <u>Draft</u>								
280		0.00							
	QC21- Final Inspection - Work Order Release								
QC	Memo	0.00							
Quality Control									

10/11/08

MF  
10-11-8

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries




Wednesday, October 13, 2010 9:02:56 AM

[illegible]

**Required Date:** 10/22/2010

**Required Qty: 1.00**

**Comments:** IPP rev:A 10.09.28 new issue DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
AN3C34A  BOLT		Purchased	No			230	Each	17.0000	1	1		10/11/85	
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				ST353		17							
				<u>115767</u>		17							
AN3C36A  BOLT		Purchased	No			230	Each	115.0000	4	4		10/11/85	
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				ST353		115							
				109771		10							
				115358		15							
				115518		40							
				<u>115882</u>		50							
AN3C37A  BOLT		Purchased	No			230	Each	60.0000	1	1		10/11/85	
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				ST354		60							
				114761		10							
				114801		50							

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Work Order ID: 62909

Parent Item: D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 10/13/2010

Required Date: 10/22/2010

Start Qty: 1.00

Required Qty: 1.00

AN3C42A

BOLT

Purchased No

230

Each

104.0000

1

1

Location

Loc Qty

Loc Code

ST354

104

106169

4

106176

100

Manufactured No

230

Each

123.0000

4

4

Location

Loc Qty

Loc Code

LG

123

59424

3

61217

30

62450

90

Manufactured No

230

Each

39.0000

4

4

Location

Loc Qty

Loc Code

LG

39

60294

1

61218

1

62451

37

Manufactured No

230

Each

95.0000

7

7

D3873-1

Bushing

Location

Loc Qty

Loc Code

ST092

40

62197

40

ST093

55

57615

55

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Shop Packet Print

Page 2

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Start Date: 10/13/2010

Required Date: 10/22/2010

Start Qty: 1.00

Required Qty: 1.00

D4154-041



Wearplate Assembly

Manufactured No

230 Each 3.0000



1

1

*10-11-08*  
*B63330*

Location

Loc Qty

Loc Code

FG

62196

3

3

230 Each 8.0000



4

4

D4170-1



Bushing

Manufactured No

Location

Loc Qty

Loc Code

LG

62251

8

8

230 Each 0.0000



1

1

*4 BE 10/11/04*  
*B62710 10/11/04*

D4171-1



Bushing

MS21043-3



Nut

Purchased No

230 Each 2,564.000



5

5

*10/11/04*

Location

Loc Qty

Loc Code

FG

76

103691

76

ST301

2488

111383

23

112314

2465

*5*

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Required Date: 10/22/2010

Start Qty: 1.00

Required Qty: 1.00

NAS1149C0363R

Purchased

No

230

Each

5,796.000

9



Washer



9  
10/11/10

Location

Loc Qty

Loc Code

ST297

5796

113524

146

113644

150

113889

500

114742

5000

9  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

NAS1515H3L

Purchased

No

230

Each

380.0000

4



WASHER



4

4  
10/11/10

Location

Loc Qty

Loc Code

FG

40

102472

40

ST277

340

111819

94

113362

246

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
4

AN960JD816

Purchased

No

250

Each

127.0000

2



1/2" washer, Alum



2

2  
10/11/10

Location

Loc Qty

Loc Code

ST348

127

106043

127

2  
\_\_\_\_\_  
\_\_\_\_\_

D2744

Manufactured

No

110

Each

14.0000

1



Cap



1

Location

Loc Qty

Loc Code

LG

14

59198

14

\_\_\_\_\_  
\_\_\_\_\_  
1 BE 10/10/14

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Start Date: 10/13/2010

Required Date: 10/22/2010

Start Qty: 1.00

Required Qty: 1.00

D2600-3-BENT

Manufactured No

110

Each

17.0000

1

1



Extrusion Bent

Location

Loc Qty

Loc Code

LG

17

61634

7

62594

10

①

DP 10-10-14

D2743

Manufactured No

160

Each

214.0000

8

8



Crossbolt Spacer

Location

Loc Qty

Loc Code

LG

214

50281

10

57953

2

59111

95

61844

107

8

BE 10/11/04

D2739

Manufactured No

160

Each

0.0000

1

1



350 I Beam

62688



①

BB 10/11/03

D3490-3

Manufactured No

160

Each

39.0000

4

4



Cross Bolt Spacer

Location

Loc Qty

Loc Code

LG

39

60294

1

61218

1

62451

37

4

BE 10/11/04

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



# Picklist Print

Wednesday, October 13, 2010 9:02:56 AM

Work Order ID: 62909

Parent Item: D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 10/13/2010

Required Date: 10/22/2010

Start Qty: 1.00

Required Qty: 1.00

D3490-1 Manufactured No 160 Each 123.0000 4 4



Cross Bolt Spacer

Location	Loc Qty	Loc Code
LG	123	
59424	3	
61217	30	
62450	90	

4 BE 10/1/10

ALS4-1032-225 Purchased No 230 Each 4,870.000 4 4



Insert

Location	Loc Qty	Loc Code
PK011	4870	
110768	4870	

10/1/10

D3492-041 Manufactured No 230 Each 17.0000 8 8



Plug Assembly

Location	Loc Qty	Loc Code
FP013	17	
59114	1	
61311	16	

8 10/1/10

AN8C35A Purchased No 230 Each 30.0000 1 1



BOLT

Location	Loc Qty	Loc Code
FP	1	
110847	1	
ST346	29	
114442	5	
115188	24	

115960 10/1/10

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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Wednesday, October 13, 2010 9:02:56 AM

Work Order ID: 62909

Parent Item: D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 10/13/2010

Required Date: 10/22/2010

Start Qty: 1.00

Required Qty: 1.00

D3488-041

Manufactured No

230

Each

4.0000

1

1



Blade Fitting Assembly, LH

Location

Loc Qty

Loc Code

FP

1

53915

1

FP007

3

56052

3

AN6C44A

Purchased

No

230

Each

85.0000

4

4



BOLT

Location

Loc Qty

Loc Code

FG

2

103964

2

ST344

83

111649

2

114653

1

114941

75

115030

5

MS21083C8

Purchased

No

230

Each

99.0000

1

1



NUT

Location

Loc Qty

Loc Code

ST303

99

113845

5

114934

3

115594

41

115884

50

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries

# Picklist Print

Page 8

Wednesday, October 13, 2010 9:02:56 AM

Work Order ID: 62909

Parent Item: D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 10/13/2010

Required Date: 10/22/2010

Start Qty: 1.00

Required Qty: 1.00

D3631-1

Manufactured No

230

Each

387.0000

8

8



Washer

Location

Loc Qty

Loc Code

ST072

113

60755

113

ST076

274

52693

206

54388

68

AN960C10L

NAS1149C0332  
R

Purchased

No

230

Each

29.0000

4

4



washer

Location

Loc Qty

Loc Code

ST245

29

107534

29

D2745

Manufactured

No

230

Each

189.0000

8

8



Bushing

Location

Loc Qty

Loc Code

ST023

189

52311

5

59112

4

61203

76

61988

104

AN960C816L

NAS1149C0332A

Purchased

No

230

Each

0.0000

1

1



WASHER

Wednesday, October 13, 2010 9:02:56 AM

Shop Packet Print

Page 8

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Wednesday, October 13, 2010 9:02:56 AM

Work Order ID: 62909

Parent Item: D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 10/13/2010

Required Date: 10/22/2010

Start Qty: 1.00

Required Qty: 1.00

D3492-043

Manufactured No

230

Each

35.0000

8

8



Plug Assembly



10/11/08sf

Location

Loc Qty

Loc Code

FP

2

54682

2

FP013

33

59117

1

59190

4

61842

28

AN3C6A

Purchased

No

230

Each

261.0000

4

4



BOLT



10/11/08sf

Location

Loc Qty

Loc Code

ST351

261

111982

261

MS21043-6

Purchased

No

230

Each

634.0000

4

4



NUT



10/11/08sf

Location

Loc Qty

Loc Code

ST301

634

112314

634

D3493-1

Manufactured

No

250

Each

44.0000

2

2



Washer



10/11/08sf

Location

Loc Qty

Loc Code

ST062

40

61672

40

ST065

4

60873

4

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries



# Picklist Print

Wednesday, October 13, 2010 9:02:56 AM

Page 10

Work Order ID: 62909

Parent Item: D350-636-015

Parent Item Name: Skidtube STD w/ Training Wearplates, LH

Start Date: 10/13/2010

Required Date: 10/22/2010

Start Qty: 1.00

Required Qty: 1.00

MS21083C8  
NUT

Purchased

No

250

Each

99.0000

1

2



10/11/10

Location

Loc Qty

Loc Code

ST303

99

113845

5

114934

3

115594

41

115884

50

2

AN8C21A  
BOLT

Purchased

No

250

Each

53.0000

2

2



10/11/10

Location

Loc Qty

Loc Code

ST345

53

113558

1

114653

12

115723

40

2

D2741  
Blade, 350 Skidtube

Manufactured

No

250

Each

35.0000

1

1



10/11/10

Location

Loc Qty

Loc Code

ST466

35

60210

35

1

Wednesday, October 13, 2010 9:02:56 AM

Shop Packet Print

Page 10

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

QTY -041	QTY -042	QTY -043	QTY -044	PART NUMBER	DESCRIPTION
X				D4168-041	350 SKIDTUBE ASSEMBLY, LH
	X			D4168-042	350 SKIDTUBE ASSEMBLY, RH
		X		D4168-043	350 SKIDTUBE ASSEMBLY, LH
			X	D4168-044	350 SKIDTUBE ASSEMBLY, RH
1	1	1	1	D2739	WEB
8	8	8	8	D2743	SPACER
1	1	1	1	D2744	CAP
8	8	8	8	D2745	BUSHING
1	1	1	1	D3488-041	BLADE FITTING, LH
4	4	4	4	D3488-042	BLADE FITTING, RH
4	4	4	4	D3490-1	SPACER
		4	4	D3490-3	SPACER
8	8	8	8	D3490-5	SPACER
8	8	8	8	D3492-041	PLUG ASSEMBLY
		8	8	D3492-043	PLUG ASSEMBLY
8	8	8	8	D3492-045	PLUG ASSEMBLY
7	7	7	7	D3631-1	WASHER
1	1	1	1	D3873-1	BUSHING
1	1	1	1	D4154-041	WEARPLATE ASSEMBLY
1	1	1	1	D4168-1	SKIDTUBE WELDMENT, LH
		1	1	D4168-2	SKIDTUBE WELDMENT, RH
		1	1	D4168-3	SKIDTUBE WELDMENT, LH
4	4	4	4	D4168-4	SKIDTUBE WELDMENT, RH
1	1	1	1	D4170-1	SPACER
		1	1	D4171-1	BUSHING
4	4	4	4	ALS4-1032-225	INSERT
4	4	4	4	AN3C6A	BOLT
1	1	1	1	AN3C34A	BOLT
4	4	4	4	AN3C36A	BOLT
4	4	4	4	AN6C44A	BOLT
1	1	1	1	AN8C35A	BOLT
9	9	9	9	AN960C10	WASHER (OR NAS1149CO363R)
4	4	4	4	AN960C10L	WASHER (OR NAS1149CO332R)
1	1	1	1	AN960C816L	WASHER (OR NAS1149CO832R)
5	5	5	5	MS21043-3	NUT
4	4	4	4	MS21043-6	NUT
1	1	1	1	MS21083C8	NUT
4	4	4	4	NAS1515H3L	WASHER

# GENERAL NOTES:

- MATERIAL: MAKE D4168-1/-2/-3/-4 FROM D2600-3 EXTRUSION (INITIAL LENGTH = 120.0).
- FINISH:  
CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIOR TO INSTALLING D2739 WEB.  
POWDER COAT WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3  
BLACK ANTI-SKID PAINT AS INDICATED TO 1.0 ABOVE SKIDTUBE CENTER-LINE PER DART 005 4.4 (OPTIONAL).
- TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- UNITS: INCHES UNLESS OTHERWISE NOTED
- BREAK SHARP EDGES: N/A
- IDENTIFICATION: N/A
- WEIGHT: D4168-041/-042/-043/-044 = 32.3 LBS
- WELD PER DART QSI 004
- FINAL CONFIGURATION SHOULD HAVE THE FOLLOWING MINIMUM MECHANICAL PROPERTIES:  
MINIMUM YIELD TENSILE STRENGTH = 35 KSI  
MINIMUM ULTIMATE TENSILE STRENGTH = 38 KSI
- COAT ALL EXPOSED FASTENERS WITH LPS LABORATORIES "LPS PROCYON" AFTER FINAL ASSEMBLY, CLEAN EXCESS OFF
- POWDER COATING WITH MEK DEGREASER.
- SPACER AND PLUG INSTALLED SAME AS SECTION AJ-AJ EXCEPT HORIZONTAL
- SPACER AND PLUG INSTALLED SAME AS SECTION AP-AP EXCEPT HORIZONTAL

UNCON  
SUBJECT  
WITH  
NO. 62907  
BS10-1013

RELEASED  
R 2010-09-15 D

A NEW ISSUE		SC	10.08.09
REV.	DESCRIPTION	BY	DATE
DESIGN	SC	DART AEROSPACE USA, INC.	
DRAWN	SC	PORT HADLOCK, WA	
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D4168	SHEET 1 OF 11
APPROVED		TITLE	SCALE
DE APPR.		350 SKIDTUBE ASSEMBLY	NTS
DATE	10.08.09	COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMERCIALIZED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

# Dart Aerospace Ltd

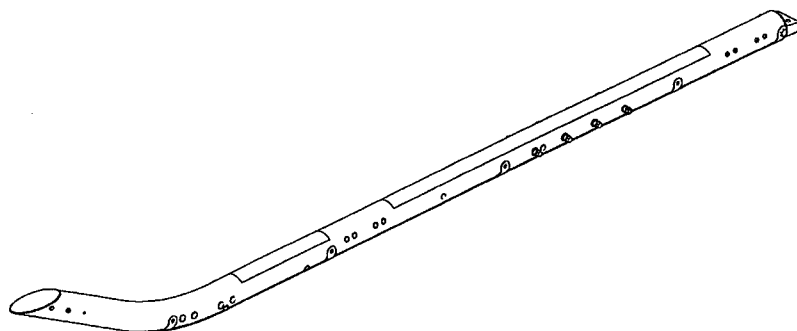
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

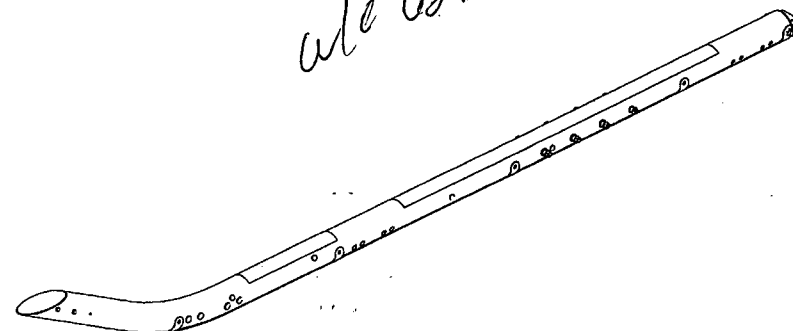
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NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



**D4168-041 350 SKIDTUBE ASSEMBLY, LH**



**D4168-042 350 SKIDTUBE ASSEMBLY, RH**

**RELEASED**  
2010-09-15  
JW

DESIGN	SC	<b>DART AEROSPACE USA, INC.</b>	
DRAWN	SC	PORT HADLOCK, WA	
CHECKED	<i>[Signature]</i>	DRAWING NO.	REV. A
MFG. APPR.	<i>[Signature]</i>	D4168	SHEET 2 OF 11
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	350 SKIDTUBE ASSEMBLY	NTS
DATE	10.08.09	<small>COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.</small>	

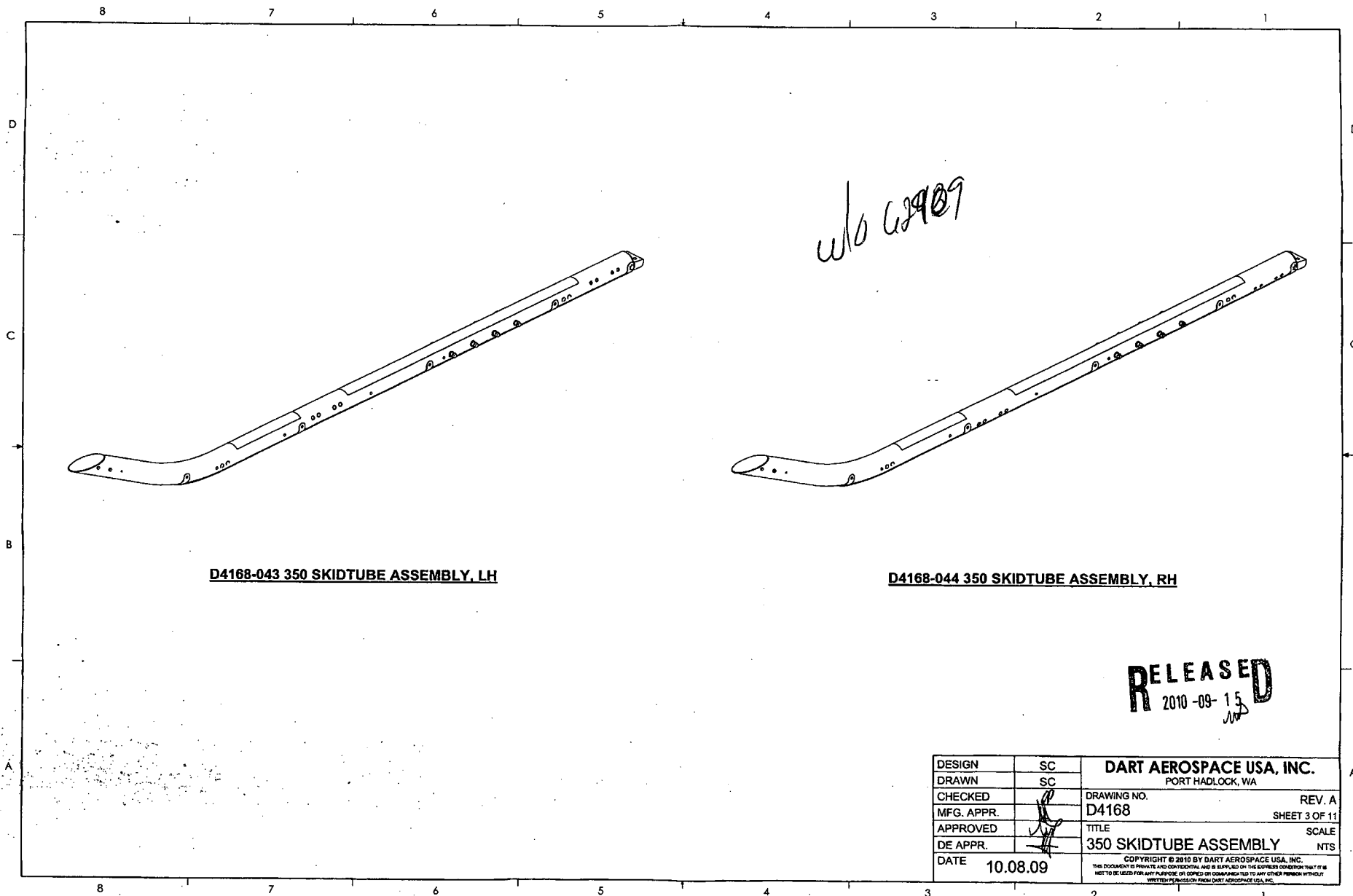
**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



*W/O 62909*

**D4168-043 350 SKIDTUBE ASSEMBLY, LH**

**D4168-044 350 SKIDTUBE ASSEMBLY, RH**

**RELEASED**  
2010-09-15

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

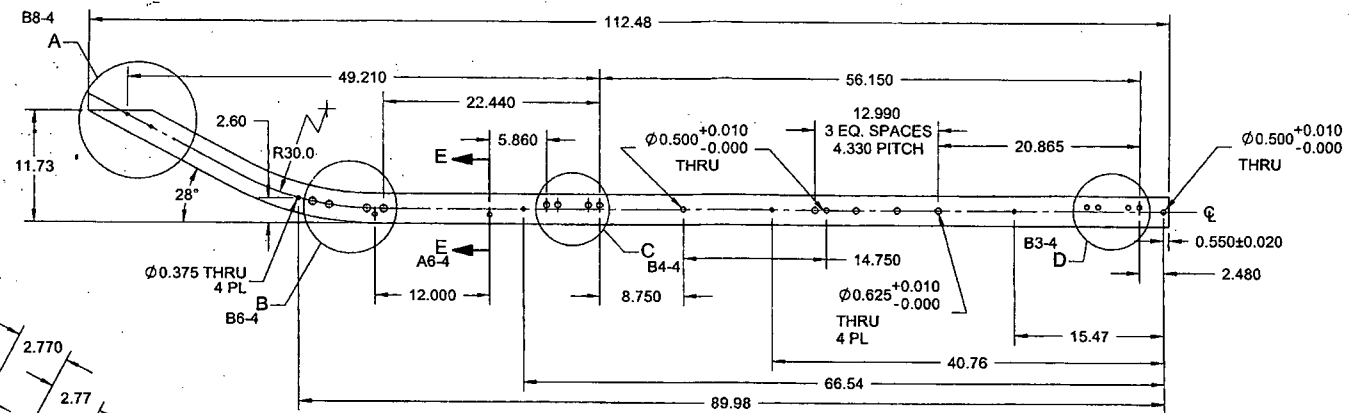
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NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

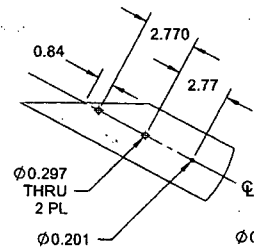
**NOTE:** Date & initial all entries



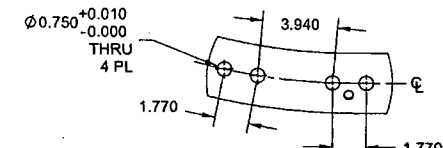
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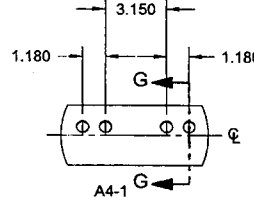
**D4168-1 LH SKIDTUBE**



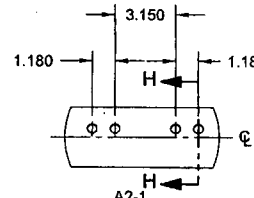
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SCALE 2X



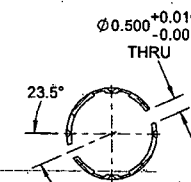
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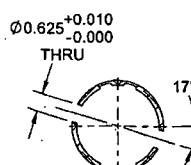
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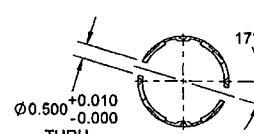
**DETAIL D**  
SCALE 2X



**SECTION E-E**  
SCALE 3X, 2 PL



**SECTION G-G**  
SCALE 3X, 4 PL



**SECTION H-H**  
SCALE 3X, 4 PL

**RELEASED**  
2010-09-15

DESIGN	SC	<b>DART AEROSPACE USA, INC.</b> PORT HADLOCK, WA	
DRAWN	SC		
CHECKED	SC	DRAWING NO. <b>D4168</b>	REV. A
MFG. APPR.	SC	SHEET 4 OF 11	
APPROVED	SC	TITLE	SCALE
DE APPR.	SC	<b>350 SKIDTUBE ASSEMBLY</b>	NTS
DATE	<b>10.08.09</b>	COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSES OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

8 7 6 5 4 3 2 1

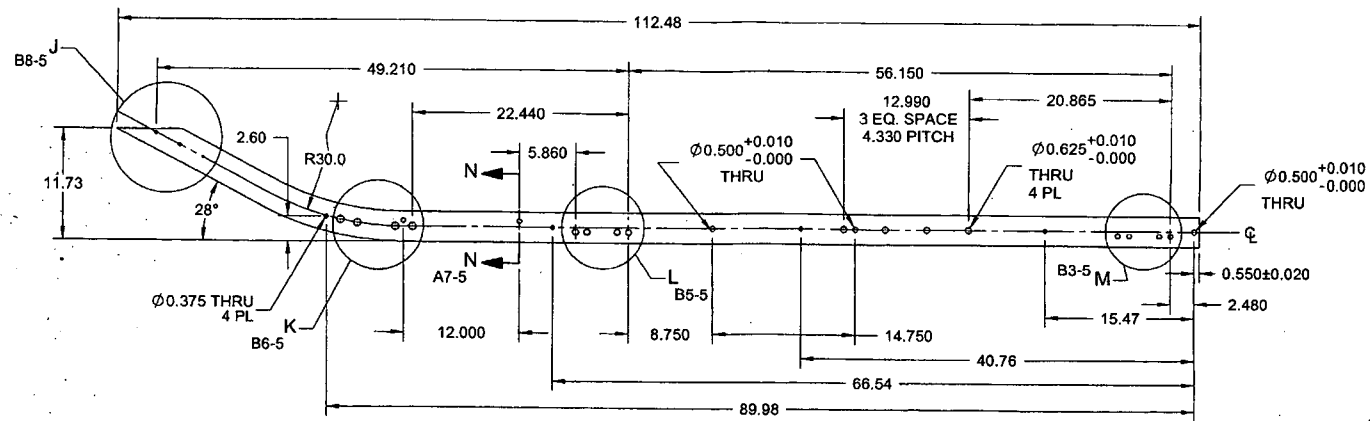
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

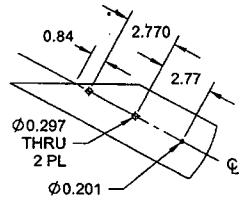
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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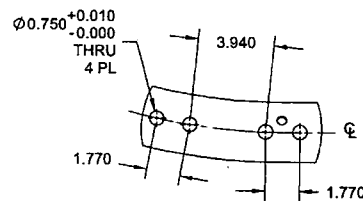
**NOTE:** Date & initial all entries



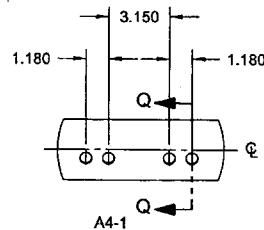
**D4168-2 RH SKIDTUBE**



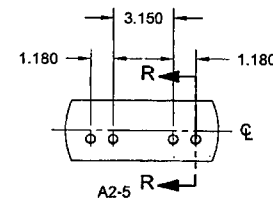
**DETAIL J**  
SCALE 2X



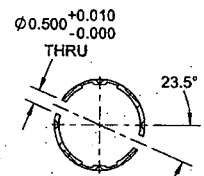
**DETAIL K**  
SCALE 2X



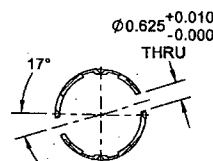
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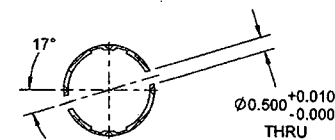
**DETAIL M**  
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**SECTION N-N**  
SCALE 3X, 2 PL



**SECTION Q-Q**  
SCALE 3X, 4 PL



**SECTION R-R**  
SCALE 3X, 4 PL

DESIGN	SC	<b>DART AEROSPACE USA, INC.</b>	
DRAWN	SC	PORT HADLOCK, WA	
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D4168	SHEET 5 OF 11
APPROVED		TITLE	SCALE
DE APPR.		350 SKIDTUBE ASSEMBLY	NTS.
DATE	10.08.09	<small>COPYRIGHT © 2010 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.</small>	

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2010-09-15

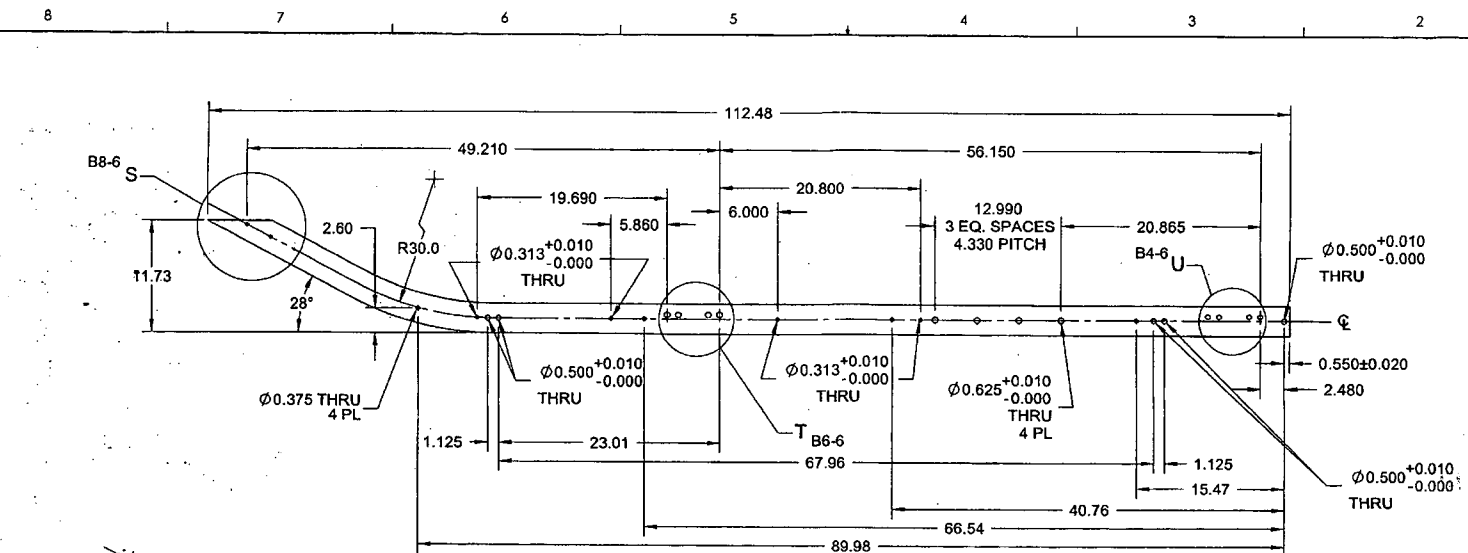
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

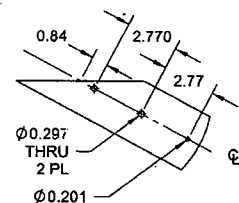
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

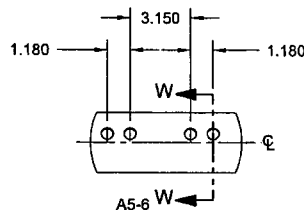
**NOTE:** Date & initial all entries



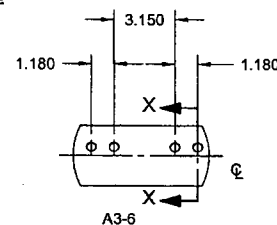
**D4168-3 LH SKIDTUBE**



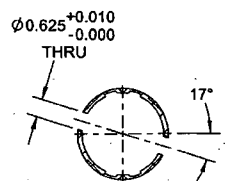
**DETAIL S**  
SCALE 2X



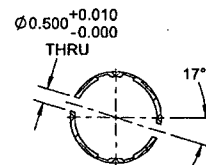
**DETAIL T**  
SCALE 2X



**DETAIL U**  
SCALE 2X







**SECTION W-W**  
SCALE 3X, 4 PL



**SECTION X-X**  
SCALE 3X, 4 PL

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2010-09-15  
M

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MFG. APPR.		D4168	SHEET 6 OF 11
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

8 7 6 5 4 3 2 1

D

D

C

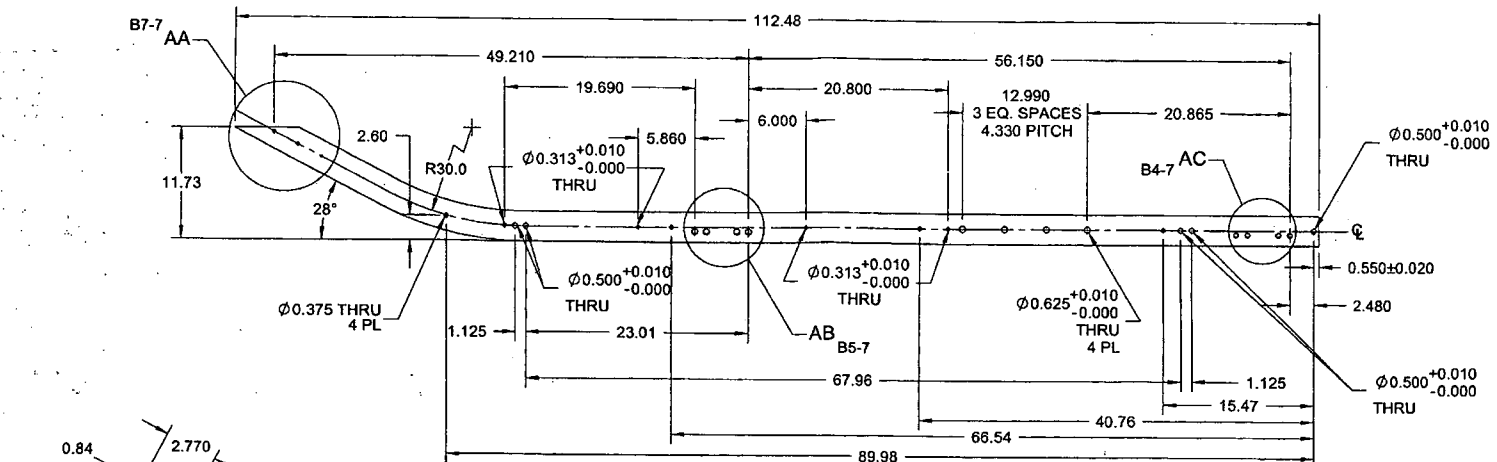
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B

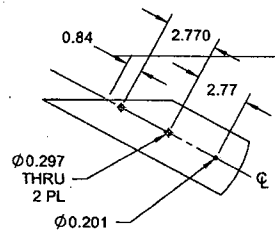
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A

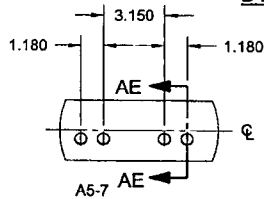
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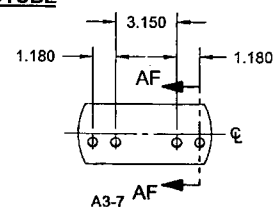
**D4168-4 RH SKIDTUBE**



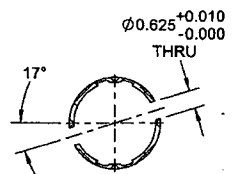
**DETAIL AA**  
SCALE 2X



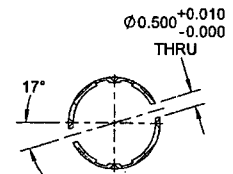
**DETAIL AB**  
SCALE 2X



**DETAIL AC**  
SCALE 2X



**SECTION AE-AE**  
SCALE 3X, 4 PL



**SECTION AF-AF**  
SCALE 3X, 4 PL

*W/6620039*

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2010-09-15

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MFG. APPR.		<b>D4168</b>	SHEET 7 OF 11
APPROVED		TITLE	SCALE
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8 7 6 5 4 3 2 1

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

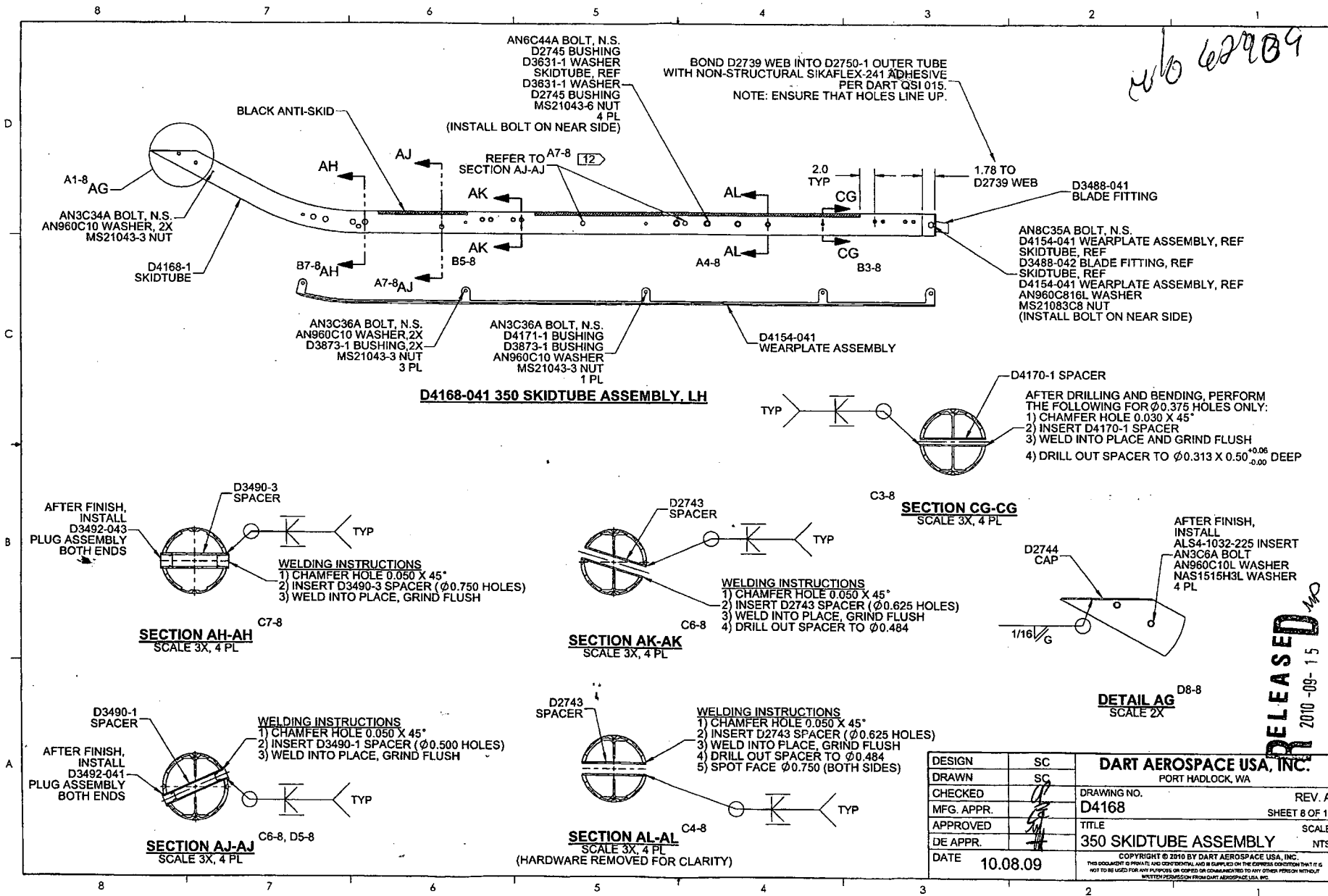
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



W/B 62909



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2010-09-15

DESIGN	SC	DART AEROSPACE USA, INC.	
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CHECKED	JP	DRAWING NO.	REV. A
MFG. APPR.	JP	D4168	SHEET 8 OF 11
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DE APPR.	JP	350 SKIDTUBE ASSEMBLY	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

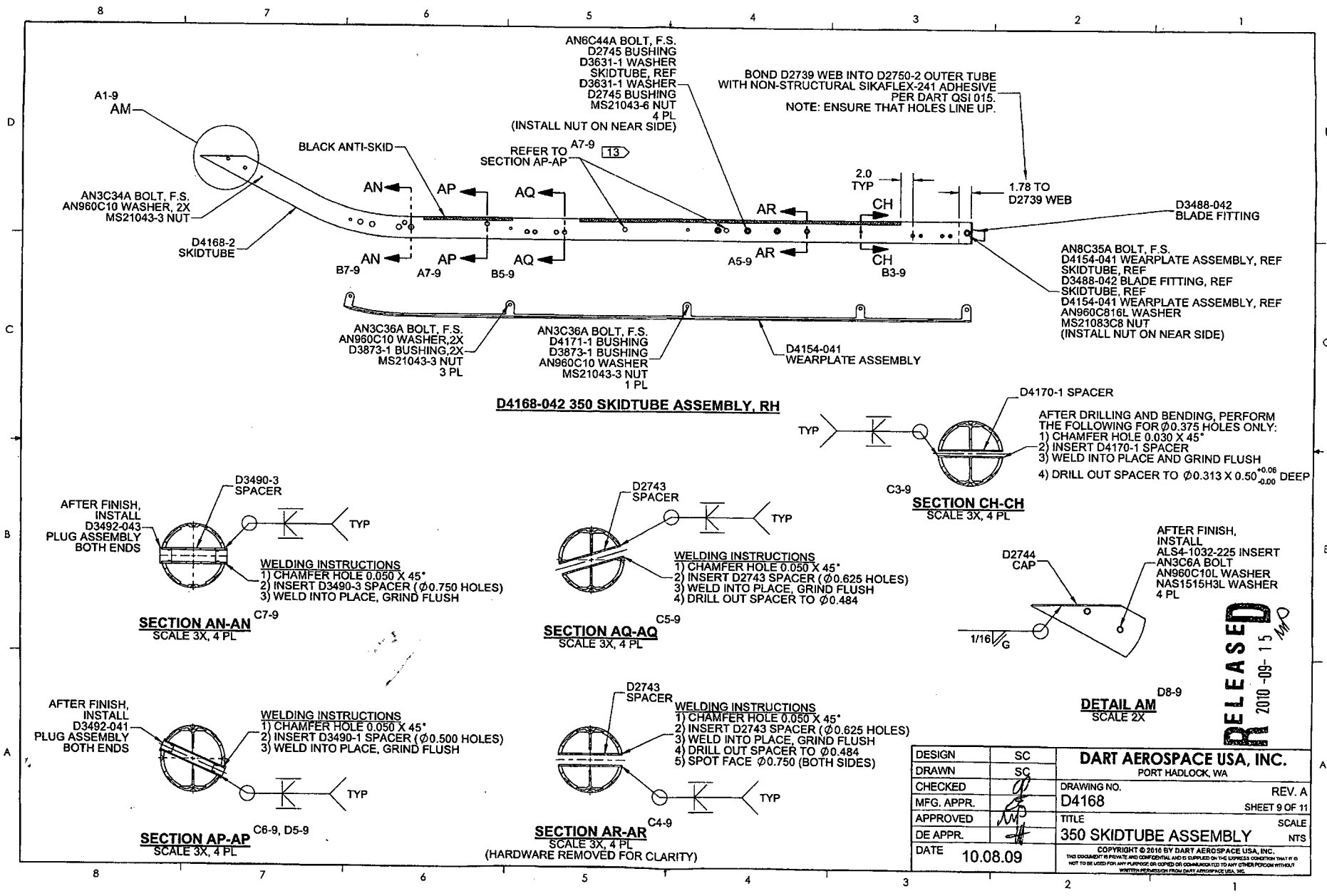
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

W/LOG 2909



RELEASED  
2010-09-15  
MPO

DESIGN	SC	DART AEROSPACE USA, INC.	
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CHECKED	SC	DRAWING NO.	REV. A
MFG. APPR.	SC	D4168	SHEET 9 OF 11
APPROVED	SC	TITLE	SCALE
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**350 SKIDTUBE ASSEMBLY, LH**

**COMPONENTS AND CALLOUTS:**

- AN3C34A BOLT, N.S.** AN960C10 WASHER, 2X MS21043-3 NUT
- AN3C36A BOLT, N.S.** AN960C10 WASHER, 2X D3873-1 BUSHING, 2X MS21043-3 NUT 3 PL
- AN6C44A BOLT, N.S.** D2745 BUSHING D3631-1 WASHER SKIDTUBE, REF D3631-1 WASHER MS21043-6 NUT 4 PL (INSTALL BOLT ON NEAR SIDE)
- AN8C35A BOLT, N.S.** D4154-041 WEARPLATE ASSEMBLY, REF SKIDTUBE, REF D3488-042 BLADE FITTING, REF SKIDTUBE, REF D4154-041 WEARPLATE ASSEMBLY, REF AN960C816L WASHER MS21083C8 NUT (INSTALL BOLT ON THIS SIDE)
- D4168-3 SKIDTUBE**
- D4154-041 WEARPLATE ASSEMBLY**
- D4170-1 SPACER**
- D3488-041 BLADE FITTING**
- D2743 SPACER**
- D2744 CAP**
- D3490-5 SPACER**
- D3490-1 SPACER**
- D3492-041 PLUG ASSEMBLY**
- BLACK ANTI-SKID**
- BOND D2739 WEB INTO D2750-3 OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015. NOTE: ENSURE THAT HOLES LINE UP.**

**SECTION C-J-CJ**  
SCALE 3X, 4 PL

**SECTION AT-AT**  
SCALE 3X, 4 PL

**SECTION AV-AV**  
SCALE 3X, 4 PL (HARDWARE REMOVED FOR CLARITY)

**SECTION AU-AU**  
SCALE 3X, 4 PL

**SECTION AW-AW**  
SCALE 3X, 4 PL

**DETAIL AS**  
SCALE 2X

**WELDING INSTRUCTIONS:**

- 1) CHAMFER HOLE 0.050 X 45°
- 2) INSERT D2743 SPACER (Ø0.625 HOLES)
- 3) WELD INTO PLACE, GRIND FLUSH
- 4) DRILL OUT SPACER TO Ø0.484
- 5) SPOT FACE Ø0.750 (BOTH SIDES)

**WELDING INSTRUCTIONS:**

- 1) CHAMFER HOLE 0.050 X 45°
- 2) INSERT D3490-1 SPACER (Ø0.500 HOLES)
- 3) WELD INTO PLACE, GRIND FLUSH

**DETAILS:**

- AFTER DRILLING AND BENDING, PERFORM THE FOLLOWING FOR Ø0.375 HOLES ONLY:
  - 1) CHAMFER HOLE 0.030 X 45°
  - 2) INSERT D4170-1 SPACER
  - 3) WELD INTO PLACE AND GRIND FLUSH
  - 4) DRILL OUT SPACER TO Ø0.313 X 0.50" DEEP
- AFTER FINISH, INSTALL AL54-1032-225 INSERT AN3C6A BOLT AN960C10L WASHER NAS1515H3L WASHER 4 PL

**RELEASED** 2010-08-15

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

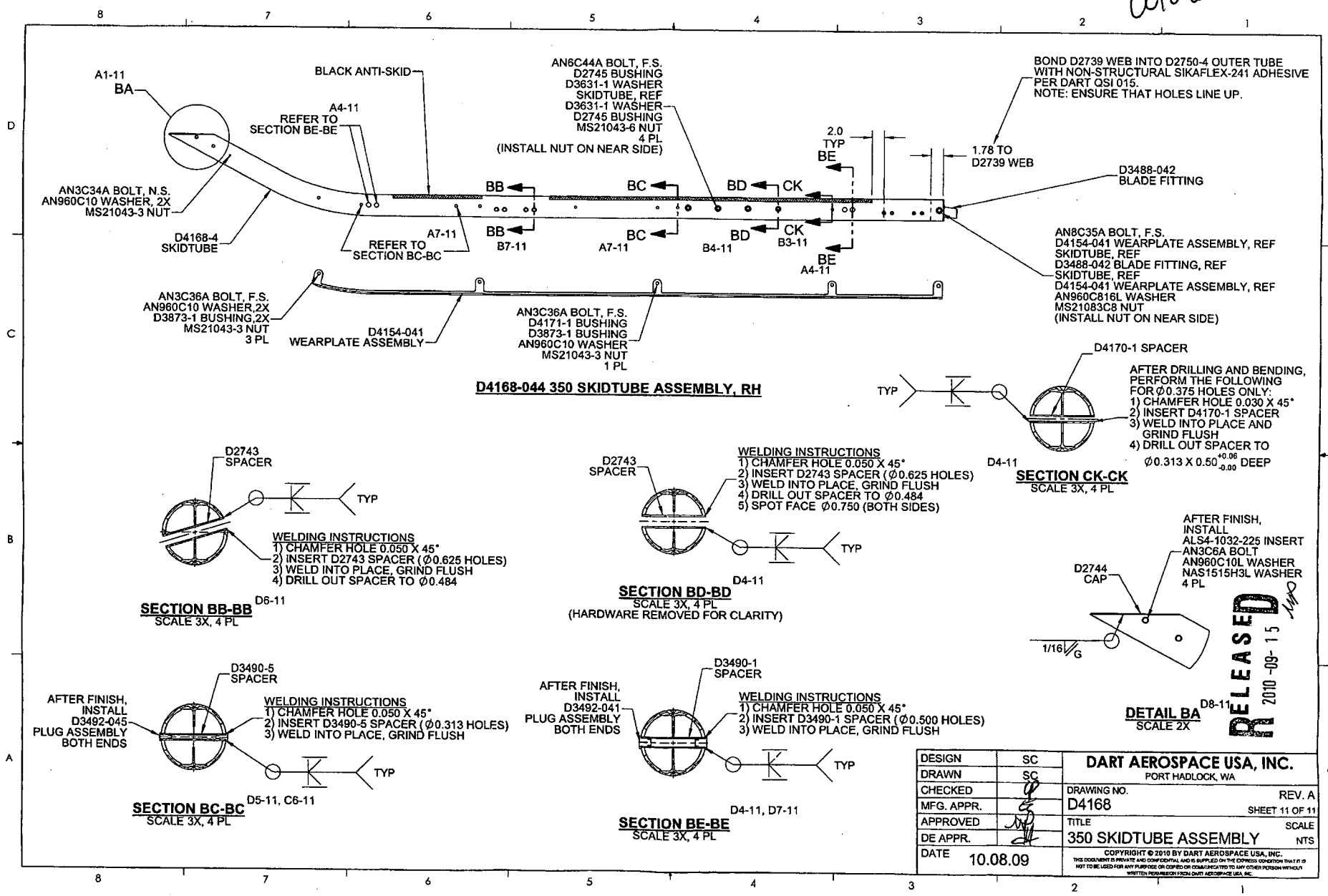
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

W/O 62004



DESIGN	SC	<b>DART AEROSPACE USA, INC.</b> PORT HADLOCK, WA	
DRAWN	SC		
CHECKED	SC	DRAWING NO.	REV. A
MFG. APPR.	SC	D4168	SHEET 11 OF 11
APPROVED	SC	TITLE	SCALE
DE APPR.	SC	350 SKIDTUBE ASSEMBLY	NTS
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Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



NO. 236

AWS D17.1.2001  
QUALIFICATION TEST RECORD

Name: Barclay Elliott  
Job number: 60986  
Part number: D350-636-012  
Description: 350 skid tube  
Welding Process: Tig[ ☒ ] Mig[ ☐ ]  
Base material: Aluminium  
Current: AC[ ☒ ] DC[ ☐ ]

TEST REQUIREMENTS AND RESULTS

Visual: pass[ ☒ ] fail[ ☐ ]  
Penetration: pass[ ☒ ] fail[ ☐ ]

UNACCEPTABLE

Cracks: pass[ ☒ ] fail[ ☐ ]  
Undercut: pass[ ☒ ] fail[ ☐ ]  
Pin holes: pass[ ☒ ] fail[ ☐ ]  
Overlap (cold lap): pass[ ☒ ] fail[ ☐ ]  
Porosity (surface): pass[ ☒ ] fail[ ☐ ]  
Coloration: pass[ ☒ ] fail[ ☐ ]

Qualifier [Signature] Date of Test Coupon 10.08.12

Welder [Signature] Date of Test Coupon 10.08.12

The above named individual is qualified in accordance with AWS D17.1.2001 to weld